

# **Summary**

## **State of California Multi-Hazard Mitigation Plan**

**July 1, 2004**

# Summary of the State of California Multi-Hazard Mitigation Plan

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## Using the Summary

This Summary provides a quick review of the key components of the State of California Multi-Hazard Mitigation Plan (Plan). Parts of this Summary are linked directly to related sections of the Plan—just click on the underlined text. For readers working with a hard copy, this Summary also includes page references to make it easier to find a given topic.

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## Purpose of the Plan

The State of California (State) is required to adopt a federally-approved State Multi-Hazard Mitigation Plan to be eligible for certain disaster assistance and mitigation funding. The overall intent of this Plan is to reduce or prevent injury and damage from natural hazards in the State. It identifies past and present mitigation activities, current policies and programs, and mitigation strategies for the future. This Plan also guides hazard mitigation activities by establishing hazard mitigation goals and objectives.

The Plan is a “living document” that will be reviewed and updated annually to reflect changing conditions and improved by new information, especially information on local planning activities.

The Plan:

- Documents statewide hazard mitigation planning in California
  - Describes strategies and priorities for future mitigation activities
  - Facilitates the integration of local and tribal hazard mitigation planning activities into statewide efforts
  - Meets state and federal statutory and regulatory requirements
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## The Planning Process

The Plan is an evaluation the hazards California faces and the strategies, goals, and activities the state will pursue to address these hazards. OES implemented the state hazard mitigation planning process by:

- Inviting state agencies with key hazard mitigation roles to join the State Hazard Mitigation Team (SHMT) and become active participants in the development of this Plan
  - Providing outreach, technical assistance, and education at the local regional, and tribal levels regarding both the state plan and the development and adoption of local plans
  - Providing the public with the opportunity to review and comment on this Plan
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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## **Integrating Other Planning Efforts**

A number of other state plans and documents were incorporated into this Plan, including:

- California Earthquake Loss Reduction Plan, prepared by the Seismic Safety Commission
- California Fire Plan, prepared by the California Department of Forestry and Fire Protection
- State of California Flood Hazard Mitigation Plan, prepared by the California Department of Water Resources

These plans are summarized below and are described in more detail in the Plan.

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## **Mitigation Plan for Seismic Hazards**

The California Earthquake Loss Reduction Plan 2002-2006 is the state's mitigation plan for seismic hazards. Approved by the governor in 2002, it articulates the state's short- and long-term earthquake hazard mitigation priorities. The plan contains three overarching goals, eleven elements and 148 initiatives. About half of the initiatives are designed to continue indefinitely.

Key components of the California Earthquake Loss Reduction Plan include:

- Goals for 2010 (Table 4.4.2A) on page 115.
  - Critically Important Initiatives (Table 4.4.2B) on page 116.
  - Seismic Mitigation Cost Estimate and Funding Sources (Excerpts from the Plan on page 115).
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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

## Information about Seismic Hazards

For additional information about seismic hazards, vulnerability assessments, and mitigation measures, go to the following sections in the State Plan:

<b>Section</b>	<b>Title</b>	<b>See Page</b>
4.1	Identifying Earthquake Hazards	52
4.2	Profiling Earthquake Hazard Events	67
4.3	Assessing Vulnerability Inventories and Mitigation Progress by Jurisdiction and Type of Construction	73
4.4	Mitigation Measures for Earthquake Hazards	109
4.5	Local Capability Assessment	122
4.6	Future Needs for Improving This Plan	123

## The California Fire Plan

The California Fire Plan is the state’s roadmap for reducing the risk of wildfire. This forward-thinking plan calls for an innovative, proactive approach that includes stakeholders in identifying the risks that citizens face and appropriate community-based solutions that lessen the cost and damage from wildfires while improving public and firefighter safety and contributing to ecosystem health. The focus of this plan is local solutions for local problems.

The framework of the plan involves:

- Assessment of wildfire potential—fuels and weather
- The level of service—fire suppression success
- Assets at risk—life, property, air quality, water and watersheds, range, wildlife habitat, and timber

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## Summary of the State of California Multi-Hazard Mitigation Plan, Continued

### Wildfire Hazards in California

For additional information about wildfire hazards, vulnerability assessments, and mitigation measures, go to the following sections in the State Plan:

<b>Section</b>	<b>Title</b>	<b>See Page</b>
5.4.1	Wildfire and Human Development	152
5.4.2	The California Fire Plan	153
5.4.3	Pre-Fire Management Program to Reduce Wildfire Costs and Losses	157
5.4.4	Strategic Wildfire Planning	159
5.4.5	Governmental Partnership	161
5.4.6	Public Awareness and Education	165
5.4.7	Building Codes, Zoning, and Residential Flammable Vegetation Regulations	168

### California's Flood History

California has a chronic and destructive flood history. While earthquakes tend to cause more extensive and costly damage, floods are noted for their persistence and effect on numerous communities during a single event. Of the 72 federally declared disasters in the state occurring between 1950 and 2000, 50 percent have been flood related.

While the “Great Flood” of 1861-62 may be unmatched in scope, the devastating effects of recent floods far exceed the damage of a century ago. Despite the construction of massive and relatively effective flood control projects, California remains highly vulnerable to flooding. A steady rise in population and the resulting development have contributed to an increased flood risk throughout the state.

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## Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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### Federal Flood Disasters in California

Between 1992 and 2002, every county in California was declared a federal disaster area at least once due to a flooding event. The counties of Los Angeles, Orange, and San Bernardino were declared federal flood disaster areas five times and sixteen other counties were declared disaster areas four times. The table below summarizes federally declared flood disasters in California since 1992:

Disaster #	Date	Number of Counties Affected	Number of Deaths	Damage
935-DR-CA	February 1992	6	5	\$123.2 Million
979-DR-CA	January 1993	25	20	\$600 Million
1044-DR-CA	January 1995	45	11	\$741.4 Million
1046-DR-CA	February 1995	57	17	\$1.1 Billion
1155-DR-CA	January 1997	48	8	\$1.8 Billion
1203-DR-CA	February 1998	40	17	\$550 Million

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### California Population in the Floodplain, by Jurisdiction

Nearly six percent of California's population (approximately 1,973,712 people) lives in a designated 100-year floodplain. The state's population is projected to increase by 40 percent through 2025, with 62 percent of the growth occurring in the Central Valley floodplain.

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### Repetitive Flood Damage

The repetitive nature of flood damage in California is of great concern. Areas flooded in the past continue to be inundated again and again. The desert community of Hesperia, in San Bernardino County, provides a classic example. Hesperia suffers repetitive flash flooding during both intense thunderstorms and winter storms. Such flooding occurred four times between 1991 and 1995. The frequent and devastating floods that occur on the Russian River in Sonoma County serve as another example. The county recorded thirteen flood events between 1995 and 2001—the most repetitive losses of any area in California. FEMA lists 801 repetitive loss properties in Sonoma County with \$47.6 million in NFIP insurance claims between 1992 and 2002.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## State Efforts

The state does the following to reduce repetitive flood losses:

- Works with FEMA to reduce NFIP claims by encouraging communities to participate in the FMA planning process and in developing FMA projects that address NFIP repetitive loss properties
  - Works with communities to develop HMGP projects that address NFIP losses.
  - Coordinates FMA and HMGP projects with communities to provide the greatest reduction of losses to the most vulnerable areas in the state
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## More Information about Flood Hazards

For more information about flooding in California, please go to the following sections of the State Plan:

<b><u>Section</u></b>	<b><u>Title</u></b>	<b><u>Page</u></b>
6.1	Identifying Flood Hazards	171
6.2	Profiling Flood Hazard Events	173
6.3	Assessing Flood Vulnerability by Jurisdiction	185
6.4	Estimating Potential Flood Losses by Jurisdiction	190
6.5	Mitigation Measures for Flood Hazards	193

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

## Other Hazards in California

In addition to earthquakes, fires and floods, California faces a number of other hazards. The [State of Emergency Map](#) (below) identifies the types of major disasters and emergencies California has faced since 1950. The Plan profiles the most significant of these other hazards. These profiles discuss past hazards, the analysis used to determine the probability of future occurrences, the potential magnitude of future occurrences, and conditions that contribute to the vulnerability.

For additional information, refer to the following sections of the State Plan:

Section	See Page
Agricultural – Drought	212
Agricultural – Freezes	216
Agricultural – Insect Pests	217
Civil Disturbances	218
Dam Failure	218
Hazardous Materials Spills	220
Landslides	220
Pollution	220
Terrorism	221
Volcanoes	223

## State Multi-Hazard Mitigation Strategy

The hazard mitigation strategy for California is guided by a vision, a mission statement, and a set of goals.

**Vision:** A safe and resilient California through hazard mitigation

**Mission:** To integrate current laws and programs into a mitigation system that will guide the state in the reduction and prevention of injury and damage from natural hazards.

### Goals:

- Save Lives and Reduce Injuries
- Avoid Damages to Property
- Protect the Environment
- Promote Hazard Mitigation as an Integrated Policy

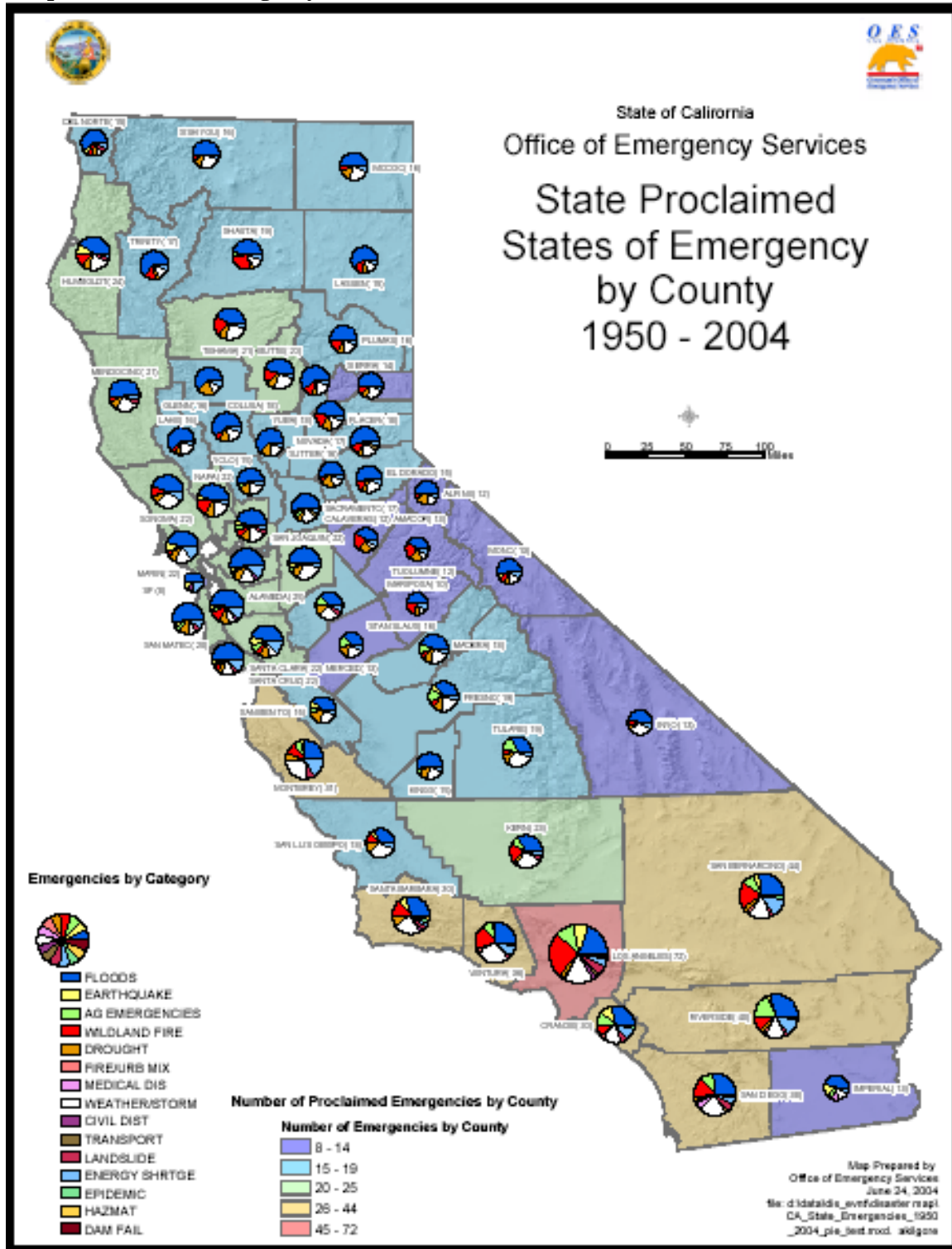
These goals and their associated objectives are described below.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

Map iii - States of Emergency



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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

**Goal 1:  
Save Lives and  
Reduce Injuries**

California is the most populated state in the country, with over 36 million residents. The sheer number of people can make emergency management activities a challenge. The challenge is further complicated by the distribution of population. The table below lists California's most populated counties and the number of state emergencies declared in each since 1970.

<u>County</u>	<u>Population</u>	<u>Emergencies</u>
Los Angeles	10, 103,000	68
Orange	3,017,000	28
San Diego	3,017,200	33
San Bernardino	1,886,400	39
Riverside	1,776,700	35
Santa Clara	1,731,400	20
Alameda	1,498,000	21

California's population is concentrated in areas where hazard risk is high. Wildland urban interface areas in San Bernardino, Riverside, Los Angeles and San Diego counties are magnets for both development and devastating fires. Flooding has historically been more prevalent in Southern California, where urban development contributes to a high amount of storm water runoff. The San Francisco Bay Area and Southern California have both experienced large earthquakes since 1989.

Regardless of where Californians live, protecting their safety is one of the state's primary responsibilities. Many state and local laws have public safety of our citizens as their primary concern. Protecting lives is also the basis for emergency planning, response, and mitigation activities.

Consistent with one of the main responsibilities of state government, the mission of OES, and the OES Disaster Assistance Division's Strategic Plan, the primary goal of this State Multi-Hazard Mitigation Plan is the protection of the people of California.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## Goal 1 Objectives

To achieve Goal 1, OES intends to:

- Continually improve the understanding of the location and potential impacts of natural hazards, the vulnerability of building types, and community development patterns and the measures needed to protect life safety
  - Continually provide state and local agencies with updated information about hazards, vulnerabilities, and mitigation measures
  - Ensure that all state codes and standards ensure the protection of life
  - Ensure that all structures in the state meet minimum standards for life safety
  - Ensure that all development in high-risk areas is protected by mitigation measures that provide for life safety.
  - Identify and mitigate all imminent threats to life safety
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## Goal 2: Avoid Damages to Property

The Plan's stakeholders have agreed that strengthening building, mechanical, and fire codes is critical to protect lives and property and reduce seismic, fire and flood hazards. These codes help communities design and construct buildings that resist the forces of nature and ensure safety. The state's land use laws assist with this effort by requiring communities to keep buildings and development out of the most hazardous areas. It is essential that mitigation planning be incorporated into all land use planning activities at the local and state levels. This includes integrating mitigation efforts into all city and county general plans.

Earthquakes, floods, and other natural hazards disrupt the critical infrastructure of the state. Transportation routes, utilities, government facilities, and hospitals are critical to the state's ability to provide essential services. Retrofitting facilities by priority based on vulnerability will protect important buildings, occupants, and informational records.

The protection of property also includes the preservation of valuable operational data, historical information, and other non-structural assets. Stakeholders have been encouraged to incorporate mitigation activities into Continuity of Business and Continuity of Government plans at the local and state levels.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## Goal 2 Objectives

To achieve Goal 2, OES intends to:

- Discourage development in high hazard areas
  - Encourage property protection measures for all communities and structures located in hazard areas
  - Reduce or eliminate all repetitive property losses due to flood, fire and earthquake
  - Research, develop, and adopt cost-effective codes and standards to protect properties beyond the minimum of protecting life safety
  - Establish a partnership among all levels of government and the business community to improve and implement methods to protect property
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## Goal 3: Protect the Environment

Californians place a strong emphasis on the quality of the physical environment. It is a primary reason why people live in California and why all levels of government and many organizations strive to conserve it.

Natural disasters not only destroy the man-made environment, but they can also adversely affect the physical environment. Dead and diseased trees create unhealthy forests and provide fuel for wildland fires that damage or eliminate habitat necessary to the survival of plants and wildlife. Flooding can adversely affect water quality in the rivers and streams that support fisheries and can also damage critical spawning habitat. Geologic hazards can result in landslides that can block streams and prevent fish migration. Debris from natural disasters can pollute the water, foul the land, and diminish air quality if not disposed of properly.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## Goal 3 Objectives

To achieve Goal 3, OES intends to:

- Ensure that all mitigation projects are reviewed for compliance with all applicable environmental laws
  - Encourage hazard mitigation measures that result in the least adverse effect on the natural environment and that use natural processes
  - Ensure that all state and local hazard mitigation planning reflect the goal of protecting the environment
  - Develop and implement wildfire mitigation and watershed protection strategies that reduce losses to wildlife and habitat and protect water while also reducing damage to development
  - Develop and distribute to state and local agencies maps of high-risk areas integrated with wildlife habitat areas
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## Goal 4: Promote Hazard Mitigation as an Integrated Policy

Currently the state and its communities have implemented hazard mitigation policies and measures in an ad hoc fashion. New mitigation policies, programs, and projects are often developed in response to the latest disaster. As the population of the state continues to grow in areas most susceptible to natural and man-caused hazards, comprehensive hazard mitigation is becoming more imperative. Planning and education are the best steps toward increased awareness and integration.

State and local hazard mitigation planning efforts are significant steps in broadening the understanding of the importance of mitigation. The law requiring local general plans that guide land use has proven to be useful in reducing the number and the severity of disasters. It will take time to see if the new hazard mitigation planning processes are as accepted and successful.

The state has already had success with education and awareness through programs addressing the three major natural hazards—fire, flood, and earthquakes. At three separate times of the year, OES, CSSC, the Department of Conservation, CDF, DWR, and the Department of Education join forces to hold special programs in schools and in communities to raise hazard awareness. In addition, OES annually sponsors the Disaster Resistant California (DRC) conference as a source of specialized mitigation training. The DRC provides a forum for businesses, academia, and government to share ideas, processes, success stories, and other information.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## Goal 4 Objectives

To achieve Goal 4, OES intends to:

- Ensure that all communities in the state are covered by a Local Hazard Mitigation Plan
  - Integrate hazard mitigation policies into local general plans
  - Update the State Multi-Hazard Mitigation Plan annually to integrate local hazard mitigation plans and the results of disaster-and hazard-specific planning efforts
  - Increase understanding of the importance of hazard mitigation among the general public and the business sector, stressing the benefits of reduced losses to life and property, the reduced cost of disaster recovery, and the increased benefit of the continuity of operations of business and government
  - Strengthen the message of hazard mitigation in disaster preparedness programs
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## Planning Priorities

Based on the assessment of California's risks and vulnerabilities, the state has identified the following priorities for federal hazard mitigation funding:

- Protect lives and property at risk from imminent hazards created or exacerbated by disasters on page 245
  - Protect vulnerable critical facilities and infrastructure in high hazard areas of the state on page 246
  - Reduce repetitive losses on page 246
  - Ensure that all communities are covered by an adopted local hazard mitigation plan on page 246
  - Improve understanding of natural hazards and the performance of hazard mitigation practices on page 246
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## Coordination of Local Hazard Mitigation Planning

In addition to state and federal codes and regulations and the expertise and assistance available through various state agencies, OES has instituted a multi-faceted Local Hazard Mitigation Planning Program (LHMP) in order to provide technical assistance to and track the progress and effectiveness of local government mitigation planning programs.

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## **LHMP Program Objectives**

The objectives of the LHMP Program are to:

- Integrate hazard mitigation activities in all pertinent local government programs
- Maximize the use of hazard mitigation resources, grants, and funds to reduce the impact of future disasters at the local level
- Maintain collaborative and cooperative relationships with local emergency managers, land use planners, and the scientific and technical communities involved in hazard mitigation
- Provide technical assistance and guidance to local governments to improve hazard risk assessments, mitigation project identification and analysis, and the development of local hazard mitigation plans
- Improve communications with stakeholders, legislators, and special interest groups involved in hazard mitigation
- Continue to enhance OES Regional and Operational Area capability and coordination
- Develop a statewide program of support for hazard identification and analysis and a risk-based approach to project identification, prioritization, and support for local governments

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## **Prioritization of Mitigation Activities**

The following criteria will be used to prioritize local hazard mitigation activities for funding:

- Percent of population at risk
- Frequency and likelihood of hazard
- Repetitive loss areas
- Small and impoverished communities
- Community planning resources available
- Types and percent of land areas at risk
- Development pressure rating
- Project urgency and cost benefit analysis
- Cost effectiveness of measure

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# Summary of the State of California Multi-Hazard Mitigation Plan, Continued

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## Sources of Hazard Mitigation Funding

For further information about mitigation funding, please refer to the following sections of the State Plan:

Section	Title	Page
10.1	Federal Funding Sources	262
10.2	State Funding Sources	271
10.3	Local Funding Sources	280
10.4	Alternative Funding Sources	281

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## Plan Maintenance Process

Because the Plan is a living document that reflects ongoing hazard mitigation activities, the process of monitoring, evaluating, and updating it will be critical to the effectiveness of hazard mitigation in California. To facilitate the state hazard mitigation planning process, the Plan will be reviewed annually and any revisions will be provided to FEMA in the form of a written report.

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